

REMARKS

In response to the Office Action mailed March 16, 2007, Applicants respectfully request reconsideration. To further the prosecution of this application, each of the rejections set forth in the Office Action has been carefully considered and is addressed below. The claims as presented are believed to be in condition for allowance.

Claims 1 and 3-11 were previously pending in this application. Claims 1 and 11 are amended herein, and claim 4 is cancelled. No claims have been added. As a result, claims 1, 3 and 5-11 are pending for examination, with claims 1 and 11 being independent. No new matter has been added.

Claim Rejections Under 35 U.S.C. §112, First Paragraph

Claims 1 and 3-11 are rejected under 35 U.S.C. §112, first paragraph, because the specification purportedly does not enable one skilled in the art to practice the invention commensurate in scope with the claims. Claim 1 recites, *inter alia*, a sensitizing dye having no acidic substituents which produces a photoelectric efficiency of greater than about 10%. The Office Action points out that Table 1 of Applicant's specification (p.24) indicates that ZnTPP does not produce a photoelectric efficiency of greater than about 10% and has no acidic substituents, and concludes that the specification is not enabling for all dyes having no acidic substituents which produce a photoelectric transfer efficiency of greater than about 10%.

Applicants respectfully traverse this rejection. Although the Office Action is correct in that Table 1 indicates that ZnTPP is a sensitizing dye having no acidic substituents which does not produce a photoelectric efficiency of greater than about 10%, this does not mean that the specification is not enabling for the full scope of claim 1. Rather, it means that a photoelectric transfer device which employs a sensitizing dye which does not produce a photoelectric efficiency of greater than about 10% (e.g., ZnTPP) would not meet all of the limitations of claim 1. Accordingly, Applicant's respectfully request withdrawal of this rejection under 35 U.S.C. §112, first paragraph.

Claims 1 and 3-11 are also rejected under 35 U.S.C. §112, first paragraph, for purportedly failing to comply with the written description requirement. Claim 1 recites, *inter alia*, a sensitizing dye which produces a photoelectric efficiency of “greater than about 10%.” The Office Action contends that because the greatest photoelectric transfer efficiency listed in Table 1 is 10.2%, the subject matter recited by the claims is not described in the specification in such a way as to reasonably convey that the inventor possessed the invention. In particular, the Office Action contends that the entirety of the claimed range of “greater than about 10%” is not supported by the specification.

Applicants respectfully traverse this rejection as well. Specifically, Table 1 provides information on one specific embodiment of the claimed invention described in Applicants’ specification at pp. 21-24. This portion of the specification explicitly states that the invention is not limited to being implemented in this fashion (see, e.g., p.24, lines 13-17). Other portions of the specification disclose other dye-sensitized photoelectric transfer devices having a photoelectric transfer efficiency of greater than 10%. For example, the paragraph beginning at p.17, line 8 states that a dye-sensitized solar cell may be constructed having a photoelectric transfer efficiency of greater than 10% by varying the thickness and/or state of a semiconductor layer, the mode of absorption of a sensitizing dye, sort of electrolyte layer, etc., such that the photoelectric transfer efficiency of the solar cell may be increased by selecting various combinations of these factors.

As a result, the specification teaches those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. Accordingly, Applicants respectfully request withdrawal of this rejection of claims 1 and 3-11 under 35 U.S.C. §112, first paragraph.

#### Claim Rejections Under 35 U.S.C. §103

Independent claims 1 and 11 are rejected under 35 U.S.C. §103(a) as purportedly being obvious over “Dye-Sensitized Solar Cells Using Semiconductor Thin Film Composed Of Titania Nanotubes” by Adachi, et al. (“Adachi”) in view of U.S. Patent No. 5,350,644 to Graetzel, et al.

("Graetzel"). Independent claims 1 and 11 are amended herein, and patentably distinguish over the asserted combination.

A. Claims 1 and 3-11

As amended herein, claim 1 recites a dye-sensitized photoelectric transfer device. The device comprises a semiconductor layer containing titania nanotubes; and a sensitizing dye retained by the titania nanotubes, wherein the sensitizing dye has no acidic substituents, wherein particles of the sensitizing dye do not associate with each other, and wherein a photoelectric transfer efficiency of the photoelectric transfer device is about 10%.

Claim 1 is amended herein to incorporate the limitations recited by former claim 4. The Office Action contends that these limitations are satisfied by U.S. Patent No. 6,586,670 to Yoshikawa ("Yoshikawa"). This contention is unsupported by the reference.

In the passage cited by the Office Action, Yoshikawa discloses that a surface active, colorless compound may be co-absorbed onto a semiconductor fine particle with a dye to weaken the interaction between particles of the dye. Yoshikawa does not, however, disclose or suggest that employing such a compound would eliminate all interaction between particles of the dye, and certainly does not disclose or suggest that dye particles would not associate with each other, as required by claim 1.

Neither Adachi nor Graetzel remedy this deficiency of Yoshikawa, as neither discloses or suggests anything at all relating to a sensitizing dye having particles which do not associate with each other.

Accordingly, the asserted combination fails to satisfy all of the limitations recited by claim 1, such that the rejection of claim 1 under 35 U.S.C. §103(a) should be withdrawn.

Claims 3 and 5-10 depend from claim 1 and are allowable for at least the same reasons.

B. Claim 11

As amended herein, claim 11 recites a method of manufacturing a dye-sensitized photoelectric transfer device. The method comprises, *inter alia*, a sensitizing dye having particles which do not associate with each other. It should be appreciated from the discussion above with reference to claim 1 that the asserted combination fails to disclose or suggest a sensitizing dye having particles which do not associate with each other. Accordingly, the rejection of claim 11 under 35 U.S.C. §103(a) should be withdrawn.

**CONCLUSION**

A Notice of Allowance is respectfully requested. If it is believed that the application is not in condition for allowance, the Examiner is requested to call the undersigned at the telephone number listed below to discuss any outstanding issues relating to the allowability of the application.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Dated: 8-14-07

Respectfully submitted,

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